

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of for providing authentication in a connection establishment process of a transmission control protocol, wherein the transmission control protocol includes a Link Establishment phase and an Authentication phase, wherein initiation of the Link Establishment phase is specified to occur apart from the Authentication phase, wherein a first processor attempts to establish a communication over a network, the method executing in a second processor, the method comprising the following acts occurring during the Link Establishment phase:

receiving a request to establish a Transmission Control Protocol (TCP) connection from the first processor;

creating an authentication session request in a standard response to the request to establish the TCP connection; and

sending the standard response to the first processor during the connection establishment process, wherein the first processor enters an authentication session as a result of receiving the authentication session request.

2 – 3. (Canceled)

4. (Currently Amended) The method of claim 3 1 wherein the standard response includes a segment used in a three-way handshake.

5. (Previously Presented) The method of claim 2 1, wherein the standard response includes a value in a TCP segment header.

6. (Original) The method of claim 5, wherein a first value is set for data from the second processor to the first processor, and where a second value is set for data from the first processor to the second processor.

7. (Previously Presented) The method of claim [[2]] 1, wherein the standard response includes a TCP option.

8. (Previously Presented) The method of claim 7, wherein the standard response includes an octet.

9. (Original) The method of claim 1, wherein the authentication session includes an Extensible Authentication Protocol (EAP) session.

10. (Previously Presented) The method of claim 1, further comprising receiving a response from the first processor in response to sending the standard response;

determining whether the response from the first processor indicates that the first processor will comply with the authentication session; and

if the first processor will not comply with the authentication session then performing a substep of

restricting access of the first processor.

11. (Original) The method of claim 1, wherein the first processor includes a client process and wherein the second processor includes a server process.

12. (Original) The method of claim 1, wherein the second processor intercepts a transmission from the first processor.

13. (Currently Amended) A method of for initiating an authentication session between first and second processes, the method comprising

including an authentication session request within a standard response to a TCP session request to establish a TCP connection, wherein the authentication session request is used to start an authentication session; and

sending the standard response including the authentication session request during connection establishment.

14. (Previously Presented) The method of claim 13, wherein the step of including includes a substep of

including an authentication session request in a transfer of data indicating a TCP session handshake.

15. (Previously Presented) The method of claim 14, wherein the authentication session request includes a value in a TCP segment header.

16. (Original) The method of claim 15, wherein a first value is set for data from the second process to the first process, and where a second value is set for data from the first process to the second process.

17. (Previously Presented) The method of claim 14, wherein the authentication session request includes a TCP option.

18. (Original) The method of claim 17, wherein the TCP option includes an octet.

19. (Previously Presented) The method of claim 13, wherein an authentication session entered as a result of using the authentication session request includes an Extensible Authentication Protocol (EAP) session.

20. (Currently Amended) An apparatus configured to provide for providing authentication in a connection establishment process of a transmission control protocol, wherein

the transmission control protocol includes a Link Establishment phase and an Authentication phase, wherein initiation of the Link Establishment phase is specified to occur apart from the Authentication phase, wherein a first processor attempts to establish a communication over a network, the apparatus comprising:

an authentication session requestor configured to [[for]] creating an authentication session request in a standard response to a TCP session request to establish a TCP connection, wherein the authentication session request is used to start an authentication session, during the Link Establishment phase; and

a transmitter configured to [[for]] sending the first portion of transmission control protocol data to the first processor during the Link Establishment phase ~~connection establishment process~~.

21. (Original) The apparatus of claim 20, wherein the transmission control protocol includes standard TCP.

22. (Original) The apparatus of claim 21, wherein the first portion of transmission control protocol data includes a request to establish a standard TCP connection.

23. (Previously Presented) The apparatus of claim 22 wherein the standard response includes a segment used in a three-way handshake.

24. (Previously Presented) The apparatus of claim 21, wherein the authentication session response includes a value in a TCP segment header.

25. (Original) The apparatus of claim 24, wherein a first value is set for data from the second processor to the first processor, and where a second value is set for data from the first processor to the second processor.

26. (Previously Presented) The apparatus of claim 21, wherein the authentication session item includes a TCP option.

27. (Original) The apparatus of claim 26, wherein the option includes an octet.

28. (Original) The apparatus of claim 20, wherein the authentication session includes an Extensible Authentication Protocol (EAP) session.

29. (Currently Amended) A computer-readable storage medium including instructions configured to provide for providing authentication in a connection establishment process of a transmission control protocol, wherein the transmission control protocol includes a Link Establishment phase and an Authentication phase, wherein initiation of the Link Establishment phase is specified to occur apart from the Authentication phase, wherein a first processor attempts to establish a communication over a network, the computer-readable storage medium comprising:

one or more instructions configured to ~~[[for]]~~ creating an authentication session request in a standard response to the request to establish the TCP connection first portion of transmission control protocol data, wherein the authentication session item is used to start an authentication session, during the Link Establishment phase; and

one or more instructions configured to ~~[[for]]~~ sending the response to the first processor during the Link Establishment phase ~~connection establishment process~~, wherein the first processor enters an authentication session as a result of receiving the authentication session request.

30. (Canceled)

31. (Currently Amended) A method of ~~[[for]]~~ initiating an authentication session in a connection establishment process of a transmission control protocol, wherein the transmission control protocol includes a Link Establishment phase and an Authentication phase, wherein initiation of the Link Establishment phase is specified to occur apart from the Authentication phase, wherein a first processor attempts to establish a communication with a

second processor over a network, the method executing in ~~the first processor~~ a second processor, the method comprising the following acts occurring during the Link Establishment phase:

 sending a request to establish a transmission session;
 receiving an authentication session request during the connection establishment process; and
 conducting authentication session communications during the connection establishment process.

32. (Original) The method of claim 31, wherein the step of sending a request includes a substep of

 sending a standard transmission control protocol (TCP) request.

33. (Original) The method of claim 31, wherein the step of receiving an authentication session request includes a substep of

 receiving the authentication session request in a first portion of transmission control protocol data.

34. (Original) The method of claim 32, wherein a first portion of transmission control protocol data includes a request to establish a standard TCP connection.

35. (Original) The method of claim 34 wherein the first portion of transmission protocol data includes a segment used in a three-way handshake.

36. (Original) The method of claim 34, wherein the authentication session request includes setting a value in a TCP segment header.

37. (Original) The method of claim 36, wherein a first value is set for data from the second processor to the first processor, and wherein a second value is set for data from the first processor to the second processor.

38. (Currently Amended) An apparatus configured to [[for]] initiating an authentication session in a connection establishment process of a transmission control protocol, the apparatus comprising:

one or more processors;

a network interface;

a computer-readable storage medium on which is stored instructions configured to [[for]] causing the one or more processors to perform a method, wherein the transmission control protocol includes a Link Establishment phase and an Authentication phase, wherein initiation of the Link Establishment phase is specified to occur apart from the Authentication phase, the method comprising the following acts occurring during the Link Establishment phase:

sending a request to establish a transmission session;

receiving an authentication session request during the connection establishment process; and

conducting authentication session communications during the connection establishment process.

39. (Original) The apparatus of claim 38, wherein standard transmission control protocol (TCP) requests are issued.

40. (Original) The apparatus of claim 39 wherein a first portion of a standard transmission control protocol request includes a segment used in a three-way handshake.

41. (Original) The apparatus of claim 39, wherein an authentication session request includes setting a value in a TCP segment header.

42. (Original) The apparatus of claim 39, wherein a first value is set for a first type of communication session and wherein a second value is set for a second type of communication session.

43. (Currently Amended) A computer-readable storage medium including instructions configured to ~~[[for]]~~ initiating an authentication session in a connection establishment process of a transmission control protocol, wherein the transmission control protocol includes a Link Establishment phase and an Authentication phase, wherein initiation of the Link Establishment phase is specified to occur apart from the Authentication phase, wherein a first processor attempts to establish a communication with a second processor over a network, the instructions executed by the first processor, the computer-readable storage medium comprising:

one or more instructions configured to ~~[[for]]~~ sending a request to establish a transmission session, during the Link Establishment phase;

one or more instructions configured to ~~[[for]]~~ receiving an authentication session request during the Link Establishment phase ~~connection establishment process;~~ and

one or more instructions configured to ~~[[for]]~~ conducting authentication session communications during the Link Establishment phase ~~connection establishment process.~~

44. (Canceled)

45. (Currently Amended) A method of ~~[[for]]~~ initiating an authentication session in a connection establishment process of a transmission control protocol ~~between first and second processors communicating via a network, the method comprising,~~ wherein the transmission control protocol includes a Link Establishment phase and an Authentication phase, wherein initiation of the Link Establishment phase is specified to occur apart from the Authentication phase, wherein a first processor attempts to establish a communication over a network, the method executing in a second processor, the method comprising the following acts occurring during the Link Establishment phase:

requesting, with the first processor, to establish a transmission session;

creating, with the second processor, an authentication session request in a first portion of transmission control protocol data, wherein the authentication session request indicates a request to start an authentication session;

sending the first portion of transmission control protocol data from the second processor to the first processor;

receiving an authentication session request during the connection establishment process; and

conducting authentication session communications during the connection establishment process.

46. (Original) The method of claim 45, wherein the step of sending a request includes a substep of

sending a standard transmission control protocol (TCP) request.

47. (Original) The method of claim 46, wherein the first portion of transmission control protocol data includes a request to establish a standard TCP connection.

48. (Original) The method of claim 47 wherein the first portion of transmission protocol data includes a segment used in a three-way handshake.

49. (Original) The method of claim 47, wherein the authentication session request includes setting a value in a TCP segment header.

50. (Original) The method of claim 45, wherein a first value is set in the first portion of transmission control protocol data for data sent from the second processor to the first processor, and wherein a second value is set in the first portion of transmission control protocol data for data from the first processor to the second processor.

51. (Currently Amended) An apparatus configured to [[for]] initiating an authentication session in a connection establishment process of a transmission control protocol, the apparatus comprising:

a client processor;

a server processor;

a computer-readable storage medium on which is stored instructions configured to [[for]] causing the one or more processors to perform a method, wherein the transmission control protocol includes a Link Establishment phase and an Authentication phase, wherein initiation of the Link Establishment phase is specified to occur apart from the Authentication phase, the method comprising the following acts occurring during the Link Establishment phase:

- requesting, with the client processor, to establish a transmission session;
- creating, with the server processor, an authentication session item in a first portion of transmission control protocol data, wherein the authentication session item is used to start an authentication session;
- sending the first portion of transmission control protocol data from the server processor to the client processor, during the connection establishment process;
- receiving the first portion of transmission control protocol data at the client processor; and
- conducting authentication session communications.

52. (Original) The apparatus of claim 51, wherein standard transmission control protocol (TCP) requests are issued.

53. (Original) The apparatus of claim 51 wherein the first portion of a standard transmission control protocol request includes a segment used in a three-way handshake.

54. (Original) The method of claim 51, wherein an authentication session request includes setting a value in a TCP segment header.

55. (Original) The method of claim 51, wherein a first value is set for a first type of communication session and wherein a second value is set for a second type of communication session.

56. (Currently Amended) A computer-readable storage medium including instructions configured to ~~[[for]]~~ initiating an authentication session in a connection establishment process of a transmission control protocol, wherein the transmission control protocol includes a Link Establishment phase and an Authentication phase, wherein initiation of the Link Establishment phase is specified to occur apart from the Authentication phase, wherein a first processor attempts to establish a communication with a second processor over a network, ~~the instructions executed by the first processor,~~ the computer-readable storage medium comprising:

one or more instructions configured to ~~[[for]]~~ requesting, with the first processor, to establish a transmission session during the Link Establishment phase;

one or more instructions configured to ~~[[for]]~~ creating, with the second processor, an authentication session item in a first portion of transmission control protocol data, wherein the authentication session item is used to start an authentication session during the Link Establishment phase;

one or more instructions configured to ~~[[for]]~~ sending the first portion of transmission control protocol data from the second processor to the first processor, during the Link Establishment phase ~~connection establishment process;~~

one or more instructions configured to ~~[[for]]~~ receiving the first portion of transmission control protocol data at the first processor during the Link Establishment phase; and

one or more instructions configured to ~~[[for]]~~ conducting authentication session communications during the Link Establishment phase.

57. (Canceled)